WHAT IS CLAIMED IS:

1.   A filter circuit comprising:

a complex block which realizes a complex zero of a transfer function;

5   a real/pure imaginary block which realizes a real zero of a transfer function and a pure imaginary zero of the transfer function; and

a single path circuit which couples the complex block with the real/pure imaginary block through a single-path.

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2.   The filter circuit according to claim 1,

wherein the complex block comprises: a first end resonator; a first resonator that is coupled to the first end resonator; a second resonator that is coupled to the first resonator; a third resonator that is coupled to the second resonator; a fourth resonator that is coupled to the third resonator; and a second end resonator that is coupled to the fourth resonator; and

a coupling between the first end resonator and the second end resonator, a coupling between the first resonator and the fourth resonator, and a coupling between the second resonator and the third resonator are in phase.

3.   The filter circuit according to claim 1,

25   wherein the real/pure imaginary block comprises: a third

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end resonator; a fifth resonator that is coupled to the third end resonator; a sixth resonator that is coupled to the fifth resonator; a seventh resonator that is coupled to the sixth resonator; an eighth resonator that is coupled to the seventh

5 resonator; and a fourth end resonator that is coupled to the eighth resonator; and

among a coupling between the third end resonator and the fourth end resonator, a coupling between the fifth resonator and the eighth resonator, and a coupling between the sixth

10 resonator and the seventh resonator, one set of adjacent ones is in phase.

4. The filter circuit according to claim 1,

wherein the real/pure imaginary block comprises: a third

15 end resonator; a fifth resonator that is coupled to the third end resonator; a sixth resonator that is coupled to the fifth resonator; a seventh resonator that is coupled to the sixth resonator; an eighth resonator that is coupled to the seventh resonator; and a fourth end resonator that is coupled to the

20 eighth resonator, and;

among a coupling between the third end resonator and the fourth end resonator, a coupling between the fifth resonator and the eighth resonator, and a coupling between the sixth resonator and the seventh resonator, all sets of adjacent ones

25 are in anti-phase.

5.   The filter circuit according to claim 1, further comprising: a second complex block which realizes a complex zero of a transfer function;

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6.   The filter circuit according to claim 2, wherein the coupling between the first end resonator and the first resonator is larger than the coupling between the fourth resonator and the second end resonator.

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7.   A filter circuit comprising:

a complex block which realizes a complex zero of a transfer function;

a real block which realizes a real zero of a transfer

15   function; and

a single path circuit which couples the complex block with the real block through a single-path.

8.   The filter circuit according to claim 7, wherein the real

20   block comprises: a third end resonator; a fifth resonator that is coupled to the third end resonator; a sixth resonator that is coupled to the fifth resonator; and a fourth end resonator that is coupled to the sixth resonator; and

a coupling between the third end resonator and the fourth

25   end resonator, and a coupling between the fifth resonator and

the sixth resonator are in phase.

9.   The filter circuit according to claim 7, further
comprising: a pure imaginary block which realizes a pure
5   imaginary zero of a transfer function

10.   The filter circuit according to claim 9, further
comprising: a second single path circuit which couples the
complex block with the pure imaginary block through a
10   single-path.

11.   A filter circuit comprising:
a complex block which realizes a complex zero of a transfer
function;
15   a pure imaginary block which realizes a pure imaginary
zero of a transfer function; and
a single path circuit which couples the complex block
with the pure imaginary block through a single-path.

20   12.   The filter circuit according to claim 11,
wherein the pure imaginary block comprises: a third end
resonator; a fifth resonator that is coupled to the third end
resonator; a sixth resonator that is coupled to the fifth
resonator; and a fourth end resonator that is coupled to the
25   sixth resonator; and

a coupling between the third end resonator and the fourth
end resonator, and a coupling between the fifth resonator and
the sixth resonator are in anti-phase.

5   13.   The filter circuit according to claim 11, further
comprising: a real block which realizes a real zero of a transfer
function.

14.   The filter circuit according to claim 13, further
10   comprising: a second single path circuit which couples the real
block with the pure imaginary block through a single-path.

15.   A filter circuit comprising:
a first complex block which realizes a complex zero of
15   a transfer function;
a second complex block which realizes a complex zero of
a transfer function; and
a single path circuit which couples the first complex
block with the second complex block through a single-path.
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16.   The filter circuit according to claim 15,
wherein the first complex block comprises: a first end
resonator; a first resonator that is coupled to the first end
resonator; a second resonator that is coupled to the first
25   resonator; a third resonator that is coupled to the second

resonator; a fourth resonator that is coupled to the third resonator; and a second end resonator that is coupled to the fourth resonator; and

a coupling between the first end resonator and the second
5   end resonator, a coupling between the first resonator and the fourth resonator, and a coupling between the second resonator and the third resonator are in phase.

17.   The filter circuit according to claim 15,
10   wherein the second complex block comprises: a fifth end resonator; a seventh resonator that is coupled to the fifth end resonator; an eighth resonator that is coupled to the seventh resonator; a ninth resonator that is coupled to the eighth resonator; a tenth resonator that is coupled to the ninth
15   resonator; and a sixth end resonator that is coupled to the tenth resonator; and

a coupling between the fifth end resonator and the sixth end resonator, a coupling between the seventh resonator and the tenth resonator, and a coupling between the eight resonator
20   and the ninth resonator are in phase.

18.   A filter circuit having a pass amplitude characteristic with a predetermined pass band, comprising:

a first circuit which realizes attenuation poles on both
25   sides of the predetermined pass band in the pass amplitude

characteristic; and

a second circuit which realizes a flat group delay characteristic in the pass band;

wherein the first circuit and the second circuit are

5   coupled with a single path;

the second circuit comprises: a first end resonator; a first resonator that is coupled to the first end resonator; a second resonator that is coupled to the first resonator; a third resonator that is coupled to the second resonator; a fourth

10   resonator that is coupled to the third resonator; and a second end resonator that is coupled to the fourth resonator; and

a coupling between the first end resonator and the second end resonator, a coupling between the first resonator and the fourth resonator, and a coupling between the second resonator

15   and the third resonator are in phase.

19.   The filter circuit according to claim 18,

wherein the first circuit comprises: a third end resonator; a fifth resonator that is coupled to the third end

20   resonator; a sixth resonator that is coupled to the fifth resonator; a seventh resonator that is coupled to the sixth resonator; an eighth resonator that is coupled to the seventh resonator; and a fourth end resonator that is coupled to the eighth resonator; and

25   among a coupling between the third end resonator and

the fourth end resonator, a coupling between the fifth resonator and the eighth resonator, and a coupling between the sixth resonator and the seventh resonator, one set of adjacent ones is in phase.

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20.   The filter circuit according to claim 18,

wherein the first circuit comprises: a third end resonator; a fifth resonator that is coupled to the third end resonator; a sixth resonator that is coupled to the fifth

10   resonator; a seventh resonator that is coupled to the sixth resonator; an eighth resonator that is coupled to the seventh resonator; and a fourth end resonator that is coupled to the eighth resonator, and;

among a coupling between the third end resonator and the

15   fourth end resonator, a coupling between the fifth resonator and the eighth resonator, and a coupling between the sixth resonator and the seventh resonator, one set of adjacent ones is in anti-phase.

20   21.   The filter circuit according to claim 18,

wherein the first circuit comprises: a third end resonator; a fifth resonator that is coupled to the third end resonator; a sixth resonator that is coupled to the fifth resonator; and a fourth end resonator that is coupled to the

25   sixth resonator; and

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a coupling between the third end resonator and the fourth

end resonator, and a coupling between the fifth resonator and

the sixth resonator are in anti-phase.

5   22.   The filter circuit according to claim 18,

wherein the first circuit and the second circuit include

a plurality of resonators; and

at least one of the plurality of resonators is formed

by a supercoductor.

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